Alg. 2 Warm Up # 4-1

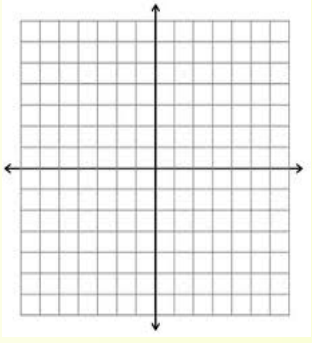
1. Describe the transformations of the parent graph to:

a) $y = -6(x + 5)^2 - 4$

b) $y = \frac{2}{7}\sqrt{x - 3} + 2$

2. Find the inverse and graph both on the same axes.

$y = \sqrt{x - 1} + 2$



HW Questions: CP 10

18) $(3xw^4)^{-2}$

$\left(\frac{1}{3xw^4}\right)^2$

$\frac{1}{9x^2(w^4)^2}$

$\frac{1}{9x^2w^8}$

24) $h^8 s^{12}\left(\sqrt[8]{h}\right)\left(s^{1/4}\right)$

$h^8 \cdot h^{1/8} \cdot s^{12} \cdot s^{1/4}$

$h^{\frac{8}{1}\cdot\frac{1}{8}+\frac{1}{8}} \cdot s^{\frac{48}{4}+\frac{1}{4}}$

$h^{\frac{64+1}{8}} \cdot s^{\frac{49}{4}}$

$h^{65/8} \cdot s^{49/4}$

HW Questions: CP 19

12. $x = \frac{y+1}{y-1}$

$x(y-1) = y+1$

$xy - x = y + 1 + x$

$-y \quad +x \quad -y$

$xy - y = x + 1$

$\frac{y(x-1)}{(x-1)} = \frac{x+1}{x-1}$

6) $\frac{5x+2}{y} - 1 = 5$

$y \cdot \frac{5x+2}{y} = 6y$

$\frac{5x+2}{6} = \frac{6y}{6}$

$y = \frac{5}{6}x + \frac{1}{3}$

METHODS AND MEANINGS

p. 233

Logarithms and Their Notation

MATH NOTES

A **logarithm** (called a "log" for short) is an exponent. An expression in logarithmic form, such as $\log_2(32)$, is read, *"the log, base 2, of 32."* To evaluate log expressions, think of the exponent: $\log_2(32) = 5$, because the exponent needed for base 2 to become 32 is 5.

An equation in logarithmic form is equivalent to another equation in exponential form, as shown at right. This conversion helps show why (based on an $x \to y$ interchange) $y = \log_b(x)$ and $y = b^x$ are inverse functions.

$y = \log_b(x)$

$b^y = x$

exponent

$y = \log_2 x$ ← Equivalent → $2^y = x$

base

Inverse:

$x = \log_2 y$

$2^x = y$ ← Equivalent

CP's: 5.2.3 Salmon worksheet

Remember: Investigating a function

- Multiple representations
- Domain and Range
- Intercepts
- Special Points → (1,0)
- Symmetry No
- Asymptotes $x=0$
- Continuous or Discrete
- Shape: curved or straight

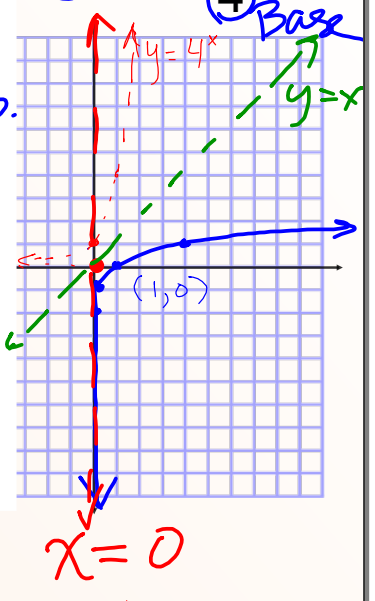
exp.

$y = \log_4 x$

$4^y = x$

exp.

x	y
1/16	-2
1/4	-1
1	0
4	1
16	2



domain

$x > 0$

range: $y = \mathbb{R}$

CP's: 5.2.3 Salmon worksheet

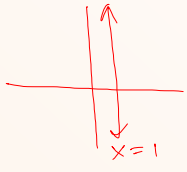
backside questions:

$y = \log_b x$

$b = 1$? $y = \log_1 x$

$1^y = x$

x	y
1	1
1	-1
1	0



$b = 0$? $y = \log_0 x$

$0^y = x$

$0^{-1} = \frac{1}{0}$

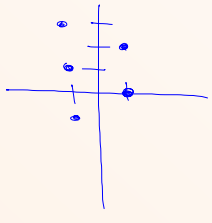
0^0

x	y
0	1
0	2
undef	-1
0	0

$b = -1$ $y = \log_{(-1)} x \rightarrow (-1)^y = x$

$(-1)^{-1} = \left(\frac{1}{-1}\right)^1$

x	y
-1	1
1	2
-1	3
1	0
-1	-1



Not a function.

Remember describing transformations:

Parent	General form
$y = x^2$	$y = a(x-h)^2 + k$
$y = \sqrt{x}$	$y = a\sqrt{x-h} + k$
$y = \frac{1}{x}$	$y = \frac{a}{1}\left(\frac{1}{x-h}\right) + k$
	$y = \frac{a}{x-h} + k$

Transformations

h → horizontal translation

k → vertical translation

If a>1, vertical stretch

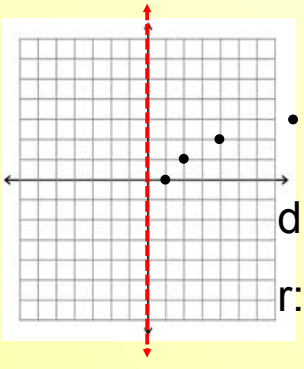
If 0<a<1, vertical compression

If a<0, reflection in the x-axis

Yesterday's CP's: Yellow, 5.2.4 (revised)

#3 $y = \log_2 x$

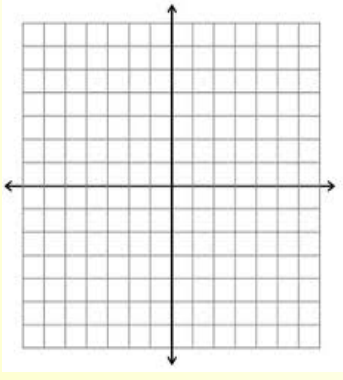
x	y



d:

r:

#4 $y = \log_2(x - 1) + 2$



HW: 5 -

96 ---> 104

No short quiz this week.

Chapter 5 test Friday includes:

Absolute Value Inequalities
Quadratic Inequalities
Factoring
Exponents
Inverses
Basic Logarithms